IN THE CLAIMS:

Claims 1-2 (Canceled)

3. (Currently Amended) A method for determining the likelihood of observing a feature vector o_t employing ~~performing~~ time and frequency SNR dependent weighting ~~in speech recognition~~ comprising the steps of:

for each time period t, estimating the SNR to get time and frequency SNR information $\eta_{t,f}$;

calculating the time and frequency weighting to get weighting coefficient γ_{tf}, wherein γ_{tf} is a function of $\eta_{t,f}$;

using an inverse DCT matrix M^{-1} to transform a cepstral distance $(o_t-\mu)$ associated with the speech time period t to a spectral distance;

computing a weighted spectral distance by applying time and frequency weighting to the spectral distance employing a time-varying diagonal matrix G_t which represents the weighting coefficient γ_{tf};

transforming the weighted spectral distance to a weighted cepstral distance employing a forward DCT matrix M to get a transformation matrix T_t and

calculating a likelihood of observing the feature vector o_t by providing the transformation matrix T_t and the ~~original MFCC~~ feature vector o_t which is unmodified, to a probability function ~~o_t that contains the information about the SNR to a recognizer that performs Viterbi decoding; and~~

~~performing weighted Viterbi recognition~~ $b_j(o_t)$.

4. (Previously Presented) The method of claim 3 wherein the estimating the SNR to get time and frequency SNR information $\eta_{t,f}$ is a pronunciation probability estimation.

5. (Previously Presented) The method of claim 3 wherein the estimating the SNR to get

time and frequency SNR information $\eta_{t,f}$ is a transmission over a noisy communication channel reliability estimation.

6. (Original) The method of claim 3 wherein

$$\gamma_{t,f} = \frac{\sqrt{\eta_{t,f}}}{1+\sqrt{\eta_{t,f}}} ,$$

which guarantees that γ_{tf} is equal to 0 when $\eta_{t,f}=0$ and $\gamma_{t,f}$ approaches 1 when $\eta_{t,f}$ is large.

7. (Currently Amended) A method for determining the likelihood of observing a feature vector o_t employing ~~performing~~ time and frequency SNR dependent weighting ~~in speech recognition~~ comprising the steps of:

for each speech frame t, estimating SNR to get time and frequency SNR information $\eta_{t,f}$;

calculating the time and frequency weighting to get weighting coefficient γ_{tf}, wherein γ_{tf} is a function of $\eta_{t,f}$;

transforming a cepstral distance $(o_t-\mu)$ associated with the speech frame t to a spectral distance;

computing a weighted spectral distance by applying time and frequency weighting to the spectral distance employing a time-varying diagonal matrix that represents the weighting coefficient γ_{tf};

transforming the weighted spectral distance to a weighted cepstral distance to get a transformation matrix T_t; and

calculating a likelihood of observing the feature vector o_t by providing the transformation matrix T_t and the ~~original MFCC~~ feature vector o_t, which is unmodified, to a probability function ~~o_t that contains the information about the SNR to a recognizer that performs Viterbi decoding; and~~

~~performing weighted Viterbi recognition~~ $b_j(o_t)$.

8. (Previously Presented) The method of claim 7 wherein the estimating the SNR to get time and frequency SNR information $\eta_{t,f}$ is a pronunciation probability estimation.

9. (Previously Presented) The method of claim 7 wherein the estimating the SNR to get time and frequency SNR information $\eta_{t,f}$ is a transmission over a noisy communication channel reliability estimation.

10. (New) A method of determining a likelihood of observing a feature vector o_t in speech recognition, comprising:

estimating a SNR for each unit t of a feature vector o_t to obtain time and frequency SNR information;

determining a transformation matrix T_t based on said time and frequency SNR information;

weighting a combination of said feature vector o_t and a speech model parameter μ by said transformation matrix T_t to obtain a weighted cepstral distance $T_t(o_t-\mu)$;

and

employing said weighted cepstral distance $T_t(o_t-\mu)$ to determine a likelihood of observing said feature vector o_t.

11. (New) The method of Claim 10 wherein said unit t represents a frame t of said feature vector o_t.

12. (New) The method of Claim 10 wherein said unit t represents a time period t of said feature vector o_t.